

REMARKS

Claims 1, 3-30 and 33-36 are all the claims pending in the application. Claims 1, 18, 29 and 31-33 are amended to incorporate the feature of claim 3. Claim 37 is added to cover features of claim 29 that are now stricken from the claim.

Claim Objections

Claims 29 objected to because “‘preferably’ is unclear as to whether or not the insulating material is REQUIRED to deposit between source and drain, but not on top of source-drain electrodes.” This limitation has been deleted from claim 29 and has been presented in new claim 37.

Claims 31, and 32 objected to because numbering of claims 31 and 32 are incorrect since, original claims 31 and 32 existed in the original application and were cancelled in a preliminary amendment. Applicants now have indicated that claims 31 and 32 are cancelled and have appropriately renumbered the subsequent claims. The discussion of the rejections is based on the currently renumbered claims.

Claim Rejections - 35 USC § 102

Claims 31-34 (now renumbered as claims 33-36) are rejected under 35 U.S.C. 102(b) as being anticipated by Chan (USP 5,407,846). This rejection is traversed for at least the following reasons.

As a preliminary matter, Applicants note that the Examiner headlines the rejection in terms of Chan, but states the rejection in terms of the patent to Gu et al. Specifically, the rejection recites “With regards to claim 31, Gu et al. teaches a thin film transistor electronic switching device, comprising ...” and “With regards to claim 32, Gu et al. teaches a thin film transistor electronic switching device, comprising:.....” Applicants do not know whether the rejection of claims 31 and 32 (now renumbered as 33 and 34) are based on Gu et al or Chan et al. accordingly, a new non-final Office Action is requested that correctly states the basis for rejection.

With regard to these claims, Applicants note that claim 3 is not rejected on the basis of Chan et al. Applicants have now amended all independent claims so as to specify that the shortest current path through the semiconducting region lies closer to the gate electrode than do

all paths of the shortest physical distance between the source and drain electrodes. This important feature, which was recited in claim 3 (now cancelled), adds to the bases for distinguishing over the prior art.

Claim Rejections - 35 USC § 103

Claims 1, 3, 4, 9-14, 16-18, 21, 23, 26, and 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gu et al. (5,920,084).

Claims 1, 18 and 29

The Examiner admits that Gu et al. does not teach shortest current path through the semiconductor region between the source and drain to be greater than 1.05 times the shortest physical distance between the source and drain nor does it teach physical distance between the source and drain to be less than one micrometer.

The Examiner asserts that in the same field of endeavor, given the teaching of Gu, it would have been obvious to determine the optimum shortest current path or physical distance between the source and drain electrodes (citing *In re Aller, Lacey, and Hall* (10 USPQ 233-237)). The Examiner asserts that it is not inventive to discover optimum or workable ranges by routine experimentation, and that criticality has not been shown.

No Lengthened Shortest Current Path

Applicants respectfully submit that the Examiner's analysis on the basis of the teachings of Figure 6 of Gu, is unsupported by the disclosure of the reference. Applicants respectfully refer the Examiner to the written description at col. 10, lines 54 to 58 in relation to the feature referenced in Figure 6. This section details that it is "inevitable" that a bit of the semiconductor layer 23 is etched along with the contact layer 25 which is above the semiconductor layer 23. Applicants respectfully submit that this does not constitute a positive teaching to provide a lengthened shortest current path, because the recess from which the lengthened shortest current path results is only described as an unavoidable result of the etching process used to pattern the contact layer 25.

No Shortest Current Path Being Closest Current Path

Finally, Applicants also submit that Gu et al. does not teach a device as claimed in amended claim 1, wherein the shortest current path through the semiconducting region lies closer

to the gate electrode than to all paths of the shortest physical distance between the source and drain electrodes. In Fig. 1a, a current path between source 31 and drain 29 will be closer to the gate electrode than the physical distance between any point of source 31 and any point of drain 29. This feature would not be obvious on the basis of the teachings of Gu et al, where there is no recognition of the importance of this parameter.

Dependent Claims

The claims dependent from claims 1, 19 or 29 would be patentable for the reasons given for those parent claims.

Claims 5-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gu et al. (5,920,084), as applied to claim 1 above, and further in view of Hirai et al (Pub No. US 2003/0160235 A1). This rejection is traversed for at least the following reasons.

The Examiner admits that Gu et al. does not teach a device as claimed in claim 1, wherein (1) the source and drain electrodes comprise a conducting polymer, (2) the semiconductor region comprises a solution processible conjugated polymeric or oligomeric material, and (3) the semiconducting region comprises a material of small conjugated molecules with solubilising side chains. The Examiner looks to Hirai et al. for these teachings, but does not rely on Hirai et al for a lengthened shortest current path.

The rejected claims would be patentable for the reasons given for amended parent claim 1.

Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Gu et al. (5,920,084), as applied to claim 1 above, and further in view of Kostantinos et al (Japanese Pub No. 2000-260999). This rejection is traversed for at least the following reasons.

The Examiner admits that Gu et al. does not teach a device as claimed in claim 1, wherein the semiconducting region comprises organic-inorganic hybrid materials self assembled from solution. The Examiner looks to Kostantinos et al. for such teaching but does not rely on Kostantinos et al for a lengthened shortest current path.

The rejected claims would be patentable for the reasons given for amended parent claim 1.

Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Gu et al. (5,920,084), as applied to claim 1 above, and further in view of Han et al (Pub No. US 2003/0155572). This rejection is traversed for at least the following reasons.

As previously noted, Hirai et al. does not teach a lengthened shortest current path. The rejected claims would be patentable for the reasons given for amended parent claim 1.

Claims 19, 20, 22, 24 and 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gu et al. (5,920,084), as applied to claim 18 above, and further in view of Hirai et al. This rejection is traversed for at least the following reasons.

The Examiner looks to Hirai et al. for teachings related to limitations added by these dependent claim, but does not rely on Hirai et al for a lengthened shortest current path.

The rejected claims would be patentable for the reasons given for amended parent claim 18.

Claim 25 is rejected under 35 U.S.C. 103(a) as being unpatentable over Gu et al. (5,920,084), as applied to claim 18 above, and further in view of Berger et al. ("Projection electron-beam lithography: A new approach, S.D. Berger, J.M. Gibson, R.M. Camarda, hereinafter Berger et al.). This rejection is traversed for at least the following reasons.

The Examiner admits that Gu et al. does not teach a method as claimed in claim 18, wherein forming one or more components of the device using electron beam lithography. The Examiner looks to Berger et al for such teaching but does not rely on Berger et al for a lengthened shortest current path.

The rejected claims would be patentable for the reasons given for amended parent claim 18.

Claim 27 is rejected under 35 U.S.C. 103(a) as being unpatentable over Gu et al. (5,920,084) as applied to claim 18 above, and further in view of Grewell et al. (David Grewell, Abbass Mokhtarzadeh, Avraham Benaar ("Feasibility of Selected Methods for Embossing Micro-features in Thermoplastics", ANTEC 2003, May 4-8, 2003)). This rejection is traversed for at least the following reasons.

The Examiner admits that Gu et al. does not teach a method as claimed in claim 18, wherein embossing techniques are used to forming the insulating region. The Examiner looks to Grewell et al for such teaching but does not rely on Grewell et al for a lengthened shortest current path.

The rejected claims would be patentable for the reasons given for amended parent claim 18.

Claim 30 rejected under 35 U.S.C. 103(a) as being unpatentable over Gu et al. (5,920,084) as applied to claim 28 above, and further in view of Hirai et al. This rejection is traversed for at least the following reasons.

The Examiner admits that Gu et al. does not teach a method as claimed in claim 18, wherein insulating material is deposited from a vapor phase. The Examiner looks to Hirai et al for such teaching but does not rely on Hirai et al for a lengthened shortest current path.

The rejected claims would be patentable for the reasons given for amended parent claims 18 and 28.

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,

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